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## CUTWORMS AND THEIR CONTROL IN CORN & OTHER CEREAL CROPS



**C**UTWORMS cause serious losses to corn and other cereal crops every year in some part of the United States. These worms are the young of brown or gray moths, or "millers," which lay their eggs on grasses and grains. The young cutworms live in the soil during the winter and attack the grain soon after it sprouts in the spring. Fall plowing is a beneficial measure for control, where practicable. Poisoning cutworms with the poisoned baits described on pages 5 to 6 is the best general remedial measure for cutworm injury.

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# CUTWORMS AND THEIR CONTROL IN CORN AND OTHER CEREAL CROPS.

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## IMPORTANCE AND NATURE OF CUTWORM INJURY.

**P**ROMPT ACTION is necessary for controlling cutworms after their presence has become noticeable in the spring. When the corn or other cereal has begun to sprout, which is the time the worms usually begin their depredations, delay in applying remedies may prove disastrous to the crop. It is usually too late then to write to the Department of Agriculture for advice as to control measures, and await a reply. The importance of recognizing these insects and knowing how to control them is therefore evident.

Cutworm injury almost invariably occurs in the spring, the plants usually being cut off at the surface, or a little below the surface, of the ground. As stated, this injury begins as soon as the first plants sprout and continues until late June or early July, when the worms have become full grown. Feeding takes place at night, the worms resting during the day beneath debris or in the soil at a depth of from one-half to 1 inch below the surface, and since they closely resemble the color of the soil in most cases, the cause of the injury is often not apparent. If the soil surrounding the cut-off plant be examined carefully, however, the culprit will quite likely be found curled up in the soil as illustrated (fig. 1, c).

## LIFE HISTORY OF CUTWORMS.

The various cutworms are known under a number of popular names, such as the glassy cutworm,<sup>1</sup> greasy cutworm,<sup>2</sup> variegated cutworm<sup>3</sup> (fig. 1), spotted cutworm<sup>4</sup> (fig. 2), etc., but the injuries caused by them are very similar and their habits in general are also much the same. The parents of cutworms are grayish or brownish moths, or "millers," which commonly occur at lights during summer eve-

<sup>1</sup> *Hadena devastatrix* Brace.

<sup>2</sup> *Agrotis upisicn* Rott.

<sup>3</sup> *Peridroma margaritosa* Haw.

<sup>4</sup> *Noctua c-nigrum* L.

nings. Each moth may lay from 200 to 500 eggs, either in masses or singly, in fields covered with dense vegetation, and hence are to be found more often in cultivated fields which have been in grass or

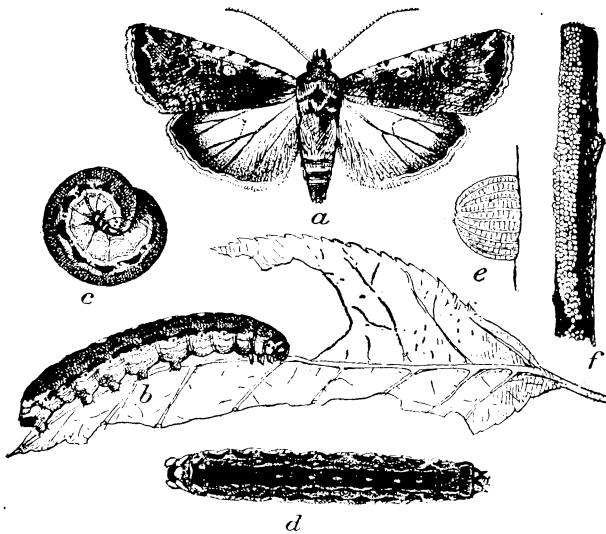


FIG. 1.—Variegated cutworm (*Peridroma margaritosa*): a, Moth; b, normal form of caterpillar, side view; c, same in curved position; d, dark form, view of back; e, greatly enlarged egg, seen from side; f, egg mass on twig. (Howard.)

weeds the preceding fall. The eggs hatch in the fall, a few weeks after they are laid, usually during September, and the young cutworms, after feeding on grass and other vegetation until cold weather, pass the winter as partly grown caterpillars. If such infested fields are left to grass, no noticeable injury is

likely to occur, but when it is broken up and planted to corn or other wide-row crops, the worms, being suddenly placed on "short rations," often injure severely the newly planted crops, the nearly full-grown worms feeding greedily and consuming large amounts of food. In northern latitudes they attain full growth and stop feeding in late June or early July, and change to the pupal or resting stage. The injury often ceases so suddenly that farmers are at a loss to account for the fact.

In the western and north-western States a distinct group of cutworms occurs, the individual members of which have been studied but slightly. Such studies have shown that some of them at least have life histories quite different from those of the cutworms of the eastern or more humid regions of the United States, as outlined above. These western cutworms have been known under the names of the "army cutworms" or the "western army cutworm."

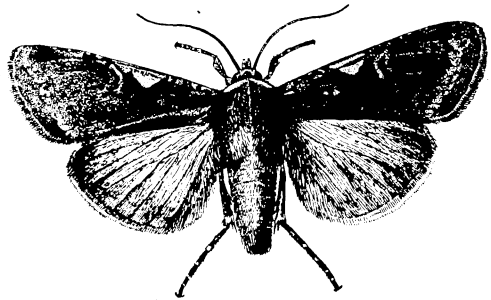


FIG. 2.—Adult, or moth, of the spotted cutworm.

## CONTROL OF CUTWORMS.

## CULTURAL METHODS.

Land to be planted to corn the following spring, especially such land as has lain in grass for a considerable time and is likely to contain cutworms, should be plowed in midsummer or early fall about the time the eggs are laid, or better, before the eggs are laid, for then vegetation which is suitable for the moths to lay their eggs upon is removed. The earlier the preceding year grasslands to be planted to corn are plowed, the less will be the probability that the cutworm moths will have laid their eggs thereon and the less, consequently, will be the danger of injury by cutworms the following year.

Late fall and winter plowing of grasslands, although not as effective as early plowing, will destroy many of the hibernating cutworms, as well as such other important corn pests as white grubs, and should be practiced when earlier plowing is impracticable.

Unfortunately these measures are not applicable in the case of the pale western cutworm,<sup>5</sup> a species of almost exclusively subterranean habits which recently has become widely injurious in Montana, North Dakota, and the prairie Provinces of Canada. No thoroughly satisfactory method of control has as yet been developed for this pest.

## USE OF HOGS AND POULTRY.

Pasturing hogs upon land supposed to harbor cutworms is a beneficial practice, as these animals root up and devour insects of many kinds, including cutworms, in large numbers. Farm poultry, if trained to follow the plow, will prove of inestimable value.

## POISONED BAITS.

When cutworms are found to be abundant on corn land, the use of a poisoned bait is recommended. This may be prepared as follows:

Wheat bran .....	pounds..	50
Paris green or crude arsenic.....	do.....	2
Blackstrap molasses.....	quarts..	2
Water .....	gallon..	1,
or more as needed.		

Mix thoroughly together in a dry state the poison and the bran, then add the diluted molasses and stir vigorously until thoroughly mixed.

Distribute this bait over the infested field broadcast, taking care to sprinkle it sparingly around each hill. In case bran can not be readily obtained, middlings or alfalfa meal may be successfully substituted.

Where bran and other fillers for poisoned baits are prohibitively expensive or difficult to obtain in sufficient quantities, they may be

<sup>5</sup> *Porosagrotis orthogonia* Morr.

diluted with equal parts of fresh hardwood sawdust. The formula for poisoned bait prepared in this manner is as follows:

Paris green or white arsenic.....	pounds..	2
Fresh hardwood sawdust.....	do....	25
Wheat bran.....	do....	25
Molasses.....	quarts..	2
Water.....	do....	4 to 8,
or more as needed.		

This mixture is not quite so efficient as the poisoned bait containing the entire amount of bran, but it has shown good results and may be used to advantage when necessary. Pine sawdust should not be used, as this seems to repel the insects.

Where only a small quantity of poisoned bait is required, the following formula will be found most convenient:

White arsenic or Paris green.....	pound..	$\frac{1}{2}$
Dry bran.....	peck..	1
Molasses.....	pint..	1
Water.....	quarts..	2 to 4,
or more as needed.		

It is often advantageous to allow the mash thus obtained to stand for several hours before using it, as this seems to result in greater effectiveness.

In fields known to be infested, the distribution of this bait should be started as soon as the corn begins to appear above ground so that the cutworm may be eliminated as quickly as possible and the injured hills promptly replanted. During the warmer spring months cutworms do most of their feeding at night and burrow into the soil to the depth of an inch or two during the day, so that the bait will usually be more effective if applied during the late afternoon or early evening hours.

**CAUTION.**—Poisoned baits should be distributed thinly. Prevent domestic animals, including fowls, from eating it. Arsenic and Paris green are poisonous to animals.

#### PROTECTIVE BARRIERS AND TRAPPING.

Frequently cutworms migrate to cultivated fields from adjoining grasslands, and in such cases the crops can be protected by running a narrow band of the poisoned bait around the edge of the field or along the side nearest the source of infestation. This form of infestation most frequently occurs in the semiarid States of the West and Northwest. Where cutworms occur in hordes moving together in one direction, they may be trapped by the following method, which often is used in army-worm control: A furrow or ditch (fig. 3) is plowed or dug completely around the infested area. In attempting to cross such ditches the worms fall into them and can easily

be destroyed by crushing them with a log dragged back and forth through the ditch or furrow. If shallow post holes are sunk in the bottom of the ditch at intervals of about 20 feet, the worms will crawl along the ditch bottoms and fall into the holes, where they may be destroyed by crushing or other means. If the subsoil be



FIG. 3.—Ditch prepared to entrap marching cutworms. A log dragged back and forth through the ditch crushes the worms which have fallen into it.

of such a nature that water penetrates it but slowly, the post holes may be partially filled with water, on the top of which a layer of coal oil or petroleum may be poured. Upon falling into such holes the worms are almost immediately destroyed without further action on the part of the farmer.